We claim:

1. A wavelength tunable optical filter for optical communications systems, comprising:

a compliant support block having a longitudinal axis and a load-receiving surface oriented substantially orthogonal to said longitudinal axis, said load-receiving surface being suitable to receive an applied load in a direction substantially parallel to said longitudinal axis; and

an optical fiber having at least a section with a fiber Bragg grating written therein disposed in said compliant support block and arranged in a configuration at least partially encircling said longitudinal axis of said compliant support block,

wherein said fiber Bragg grating has a variation in refractive index along an axial direction thereof.

2. A wavelength tunable filter according to claim 1, wherein said optical fiber having at least a section with a fiber Bragg grating written therein is arranged in a spiral fashion with a fixed pitch around said longitudinal axis.

3. A wavelength tunable optical filter according to claim 1, further comprising a support frame, said compliant support block being disposed in said support frame,

wherein said support frame has an opening along a side suitable to allow said compliant support block to expand orthogonally to said longitudinal axis in response to said applied load in said direction substantially parallel to said longitudinal axis.

4. A wavelength tunable optical filter according to claim 1, further comprising a substantially rigid plate disposed proximate said load-receiving surface of said compliant support block.

5. A wavelength tunable optical filter according to claim 1, wherein a material of said compliant support block comprises a polymer.

6. A wavelength tunable optical filter according to claim 5, wherein said polymer of said compliant support block is selected from the group consisting of a visco-elastic and an elastic polymer.

7. A wavelength tunable optical filter according to claim 1, wherein said compliant support block comprises a plurality of microspheres.

8. A wavelength tunable optical filter according to claim 7, wherein said plurality of microspheres are glass microspheres.

9. A wavelength tunable optical filter according to claim 1, wherein said compliant support block has a cylindrical shape, having an end face, said end face of said compliant support block being said load-receiving surface.

10. A wavelength tunable optical filter according to claim 1, wherein said fiber Bragg grating disposed in said compliant support block has a spiral configuration, wherein an axis of said spiral configuration of said fiber Bragg grating coincides with said longitudinal axis of said cylindrical support block.

11. A wavelength tunable optical filter according to claim 1, further comprising a load generating assembly attached to said support frame.

12. A wavelength tunable optical filter according to claim 1, further comprising a micrometer assembly attached to said support frame proximate said substantially rigid plate,

wherein said micrometer assembly comprises a micrometer screw member adapted to apply a load to said support block, transferred through said substantially rigid plate.

13. A method of filtering an optical signal, comprising:

coupling an optical signal into an optical fiber;

receiving a filtered optical signal out of said optical fiber; and

varying a load applied to a compliant support block having at least a portion of said optical fiber embedded therein,

wherein said portion of said optical fiber embedded in said compliant support block has a periodic variation in refractive index along at least a portion thereof to form a fiber Bragg grating in said optical fiber.

14. A method of filtering an optical signal according to claim 13,

wherein said varying said load applied to said compliant support block changes a transmission characteristic of said fiber Bragg grating.

15. A method of filtering an optical signal according to claim 13,

wherein said compliant support block has a substantially cylindrical shape, and

wherein said varying said load applied to said compliant support block comprises changing a compressional force applied between opposing ends of said compliant support block.

16. A method of filtering an optical signal according to claim 13, wherein said filtered optical signal is reflected from said fiber Bragg grating.

17. A method of filtering an optical signal according to claim 13, wherein said filtered optical signal is transmitted through said fiber Bragg grating.

18. A wavelength division multiplexed optical communication system, comprising:

a plurality of optical transmitters;

an optical multiplexer in optical communication with said plurality of optical transmitters;

a signal transmission waveguide in optical communication with said optical multiplexer;

a tunable optical filter in optical communication with said signal transmission waveguide;

an optical demultiplexer in optical communication with said signal transmission waveguide; and

a plurality of optical receivers in communication with said optical demultiplexer,

wherein said tunable optical filter comprises:

a compliant support block having a longitudinal axis and a load-receiving surface oriented substantially orthogonal to said longitudinal axis, said load-receiving surface being suitable to receive an applied load in a direction substantially parallel to said longitudinal axis, and

a fiber Bragg grating disposed in said compliant support block and arranged in a confriguration at least partially encircling said longitudinal axis of said compliant support block,

wherein said fiber Bragg grating has a variation in refractive index along an axial direction thereof.

19. A method of making a tunable optical filter, comprising:

disposing an optical fiber having at least a fiber Bragg grating portion into a substantially cylindrical mold;

pouring support material into a substantially cylindrical mold, said support material being compliant when it sets; and

allowing said support material to set.

20. A method of making a tunable optical filter according to claim 19, further comprising attaching a load-supplying assembly to said support material.

21. A method of making a tunable optical filter according to claim 19, further comprising attaching said optical fiber having said fiber Bragg grating portion to a core of pre-set support material prior to said pouring support material into said substantially cylindrical mold.